February 9th, 2000

Dear Utah Wildlife Enthusiasts,

In the following pages are two companion documents: 1) the final version of Phase I of the Utah Division of Wildlife Resources (DWR) Strategic Plan: 1998-2003 including Mission, Vision, Values, Goals and Objectives; and, 2) a summary of an internal/external assessment report of DWR's operational environment.

I want to thank each of you who participated in the public review process of this important visioning and planning process. Individuals as well as interest groups across the state have played and will continue to play a key role in helping the Division envision our actions into the coming century through the development and application of our Strategic Plan!

As the final product of several months of deliberations of the public comment received regarding the draft strategic plan by the DWR Management Team, this operational environment assessment and strategic plan will guide the Division's direction for the next 3-4 years. While changes made due to public input on the draft strategic plan are not substantive, significant alterations now reflect your concerns more fully.

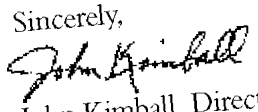
More yet remains to be done to put into action the direction laid out before us. The DWR Strategic Plan actually is set within the context of a four-stage comprehensive management system, which initially begins (i.e., stage 1 - Where are we?) with a description of the internal/external environment in which the DWR operates (see page 10). A more detailed version of this assessment will be available upon request shortly at DWR offices and the DWR web page. The management system's second stage sets direction (i.e., stage 2 - Where do we want to go?) which is captured in the Strategic Plan: 1998 - 2003, Phase I (i.e., Mission Vision, Values, Goals and Objectives). The third stage of the management system (i.e., stage 3 - How do we get there?) details program specific measures and strategies across all goals' objectives. The 'how to' is specified in the Strategic Plan: 1998 - 2003, Phase II, which is an internal implementation process. The fourth stage of the management system (i.e., stage 4 - Are we there yet?) entails receiving feedback from you to see how well we progress toward implementing this direction. Thus, your continued input regarding your satisfaction with what the Division does is instrumental to our success!

I invite you to get involved in the future of Utah's wildlife (i.e., the future quality of our life in Utah) through the Division's decision-making process by commenting on the issues brought before your volunteer citizen Regional Advisory Councils (RACs) and Utah Wildlife Board. You can express your thoughts and opinions about how we're doing through a variety of ways, including in person, at meetings, by phone, letter, e-mail, or via the DWR web site at
http://www.nr.state.ut.us/dwr/dwr.htm

Please take advantage of these public involvement opportunities and make a difference for wildlife and yourself!

Again, I thank you for your interest and commitment to the wildlife resources of Utah.

Sincerely,



John Kimball Director

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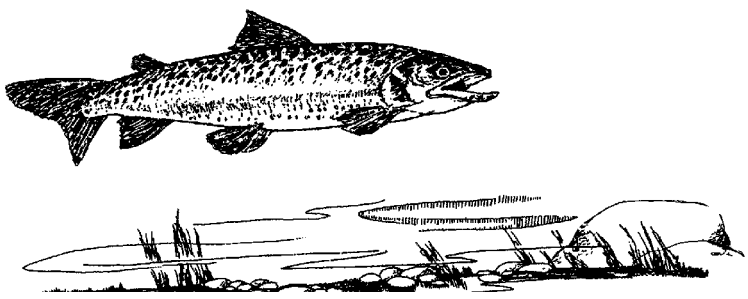
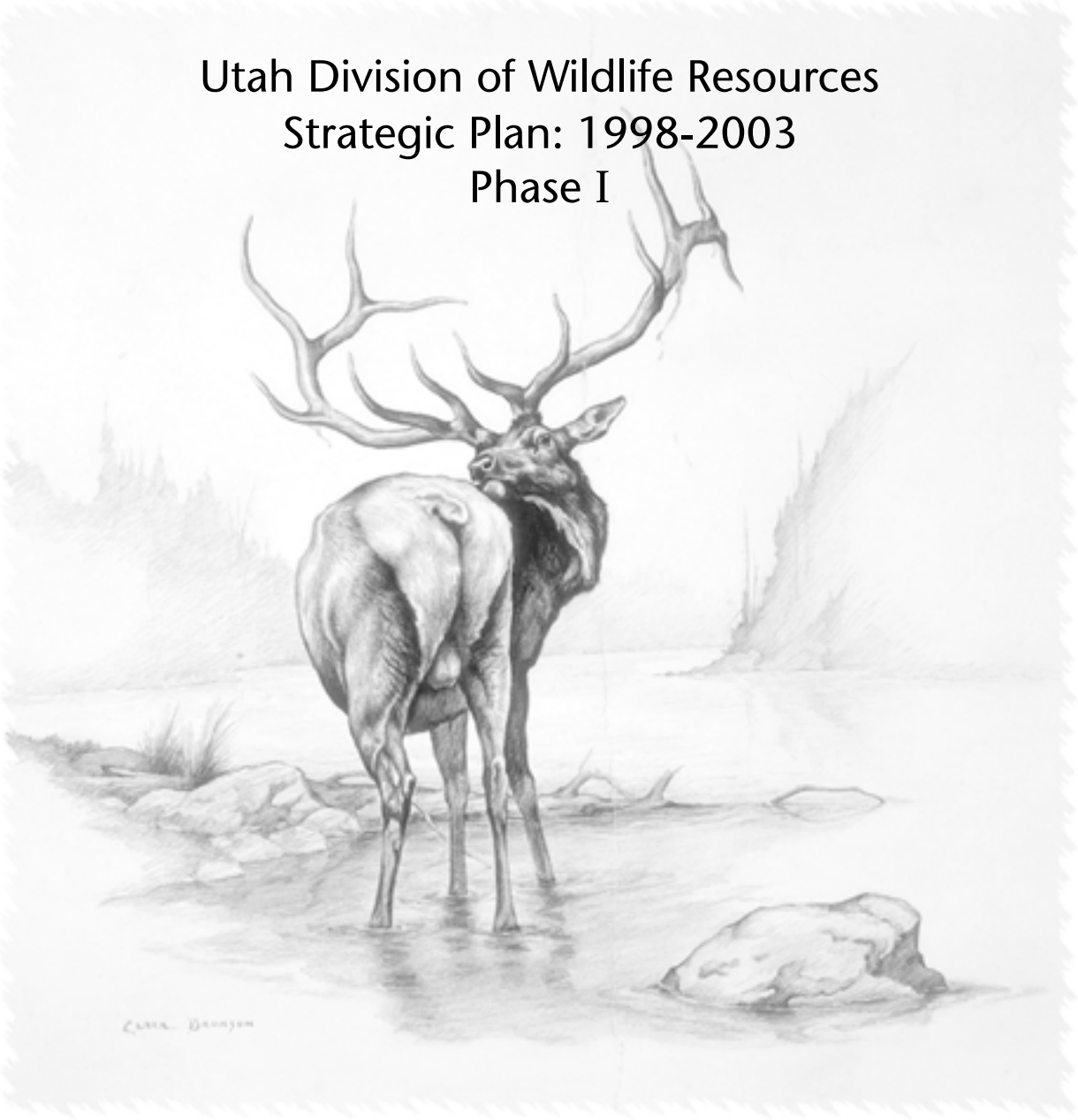


Utah Division of Wildlife Resources
Strategic Plan: 1998-2003
Phase I



Mission, Vision, Values, Goals and Objectives

February 2000

DWR MISSION
1987

The mission of the Division of Wildlife Resources is to assure the future of protected wildlife for its intrinsic, scientific, educational, and recreational values through protection, propagation, management, conservation, and distribution throughout the State.

DWR VISION
(7/98)

The Division of Wildlife Resources, charged by the citizens of Utah to assure the future of protected wildlife, will be an organization which:

- is adequately staffed by professionals recognized by the public for their leadership in the science of wildlife management and who are responsive to all public interests and deal with the public in a civil and honest manner;
- establishes long range objectives to monitor Utah's wildlife and preserves and enhances critical habitats which support broad systems of wildlife species;
- seeks to maintain healthy populations of game species to meet the recreational demands of traditional wildlife constituents;
- has a public information program that expands and defines the role of the wildlife experience in the quality of life for a broadened base of Utah citizens; and
- provides opportunities for Utahns to join with the Division in developing and supporting programs to meet established wildlife objectives.

DWR VALUES
(2/22/99)

1. **Integrity**
   a. Sincere and honest
   b. Strive to fulfill every promise and commitment
   c. Above reproach in dealing with the public and ourselves
2. **Professionalism**
   a. Meet or exceed all standards set by our profession
3. **Service**
   a. Strive to meet the needs of every person we encounter
   b. Serve the people of the state of Utah
   c. Deliver service that reflects a concern for the quality of life in our communities
4. **Teamwork**
   a. United in purpose and effort
   b. Share ideas and information through open and honest communication
5. **Listening**
   a. Listen, even when we disagree
6. **Openness**
   a. Clear, open discussions
   b. Open to divergent views
   c. Sharing information
7. **Accountability**
   a. For public benefit
   b. To fellow employees
   c. For our personal and professional conduct as individuals and as an agency
   d. For the courage to stand up for the integrity of the resources
8. **Civility**
   a. Civil behavior in polarized, emotional debate
   b. Mutual respect
9. **Cooperation**
   a. With the public
   b. With local and county governments
   c. With interest groups
   d. With private landowners
10. **Public Ownership of Wildlife**
    a. Wildlife is owned collectively by the people of Utah
    b. The Division manages wildlife as the public's steward

SYNOPSIS OF GOALS
(3/8/99)

Goal A

Conserve, protect, enhance, and manage Utah's wildlife.

Goal B

Conserve, protect, enhance, and manage Utah's ecosystems.

Goal C

Enhance wildlife recreational experiences consistent with other DWR goals.

Goal D

Provide for a broad base of economic benefits from wildlife consistent with other DWR goals.

Goal E

Ensure broad-based public involvement in the management of Utah wildlife and ecosystems.

Goal F

Foster an atmosphere which maximizes effectiveness, productivity, and quality within the Division.

Goal G

Secure new and stabilize current funding sources to improve/enhance wildlife management and to benefit a broad base of traditional and new constituencies.

RECOMMENDED OBJECTIVES BY GOALS

(Objectives are in no particular order)

Goal A

Conserve, protect, enhance and manage Utah's wildlife.

A-1. Maintain populations of harvestable wildlife species at species or drainage management plan objective levels through 2003.

A-2. Increase the distribution and/or abundance of 10% of the 1998 classified state sensitive species by 2003.

A-3. Meet state recovery goals for 3 currently listed threatened and endangered species by 2003 while at the same time preventing the need for further federal listing of any additional species.

A-4. Maintain distribution and abundance of all other naturally occurring wildlife and native plant species through 2003.

Goal B

Conserve, protect, enhance and manage Utah's ecosystems.

B-1. Increase the functioning of 10% of the currently impaired ecosystems by 2003.

B-2. Prevent declining conditions in both impaired and currently functional ecosystems through 2003.

Goal C

Enhance wildlife recreational experiences consistent with other DWR goals.

C-1. Increase user recreational satisfaction accordingly with hunting (10%), fishing (5%), trapping (10%), and wildlife watching (10%) experiences by 2003.

C-2. Reduce by 10% illegal and unethical participation in hunting, trapping, fishing, and wildlife watching by 2003.

NOTE: Legal and ethical participation are important and separate from just increasing participation. Also, there are two parts to ethics: (1) resource appreciation and (2) human interactions.

C-3. Maintain or increase participation accordingly in hunting (10%), fishing (5%), trapping (no gain), and wildlife watching (20%) by 2003.

C-4. Improve or increase by 10% public accessibility for wildlife-related recreational opportunities by 2003.

C-5. Reduce by 10% safety and health risks associated with wildlife recreational experiences by 2003.

RECOMMENDED OBJECTIVES BY GOALS

(Objectives are in no particular order)

Goal D

Provide for a broad base of economic benefits from wildlife consistent with other DWR goals.

D-1. Increase by 20% wildlife-related economies in Utah, consistent with wildlife management goals and objectives, by 2003.

D-2. Increase by 20% the awareness of the economic benefits of wildlife in Utah by 2003.

D-3. Decrease by 20% economic losses from wildlife to the citizens of Utah, consistent with wildlife management goals and objectives by 2003.

Goal E

Ensure broad-based public involvement in the management of Utah wildlife and ecosystems.

E-1. Increase by 20% support for DWR wildlife management programs in Utah by federal, state, local, and tribal governments by 2003.

E-2. Increase by 20% support for DWR wildlife management programs in Utah by the private sector and citizens by 2003.

E-3. Increase by 50% public involvement in the DWR wildlife management decision-making process in Utah by 2003.

E-4. Increase by 20% the general public's knowledge of wildlife in Utah by 2003.

Goal F

Foster an atmosphere which maximizes effectiveness, productivity, and quality within the Division.

F-1. Increase by 20% the Division's effectiveness as a wildlife management agency.

F-2. Increase by 20% Division employee job satisfaction by 2003.

F-3. Increase by 20% public satisfaction with services provided by the Division by 2003.

Goal G

Secure new and stabilize current funding sources to improve/enhance wildlife management and to benefit a broad base of traditional and new constituencies.

G-1. Increase restricted funds to $18 million annual revenue by 2003.

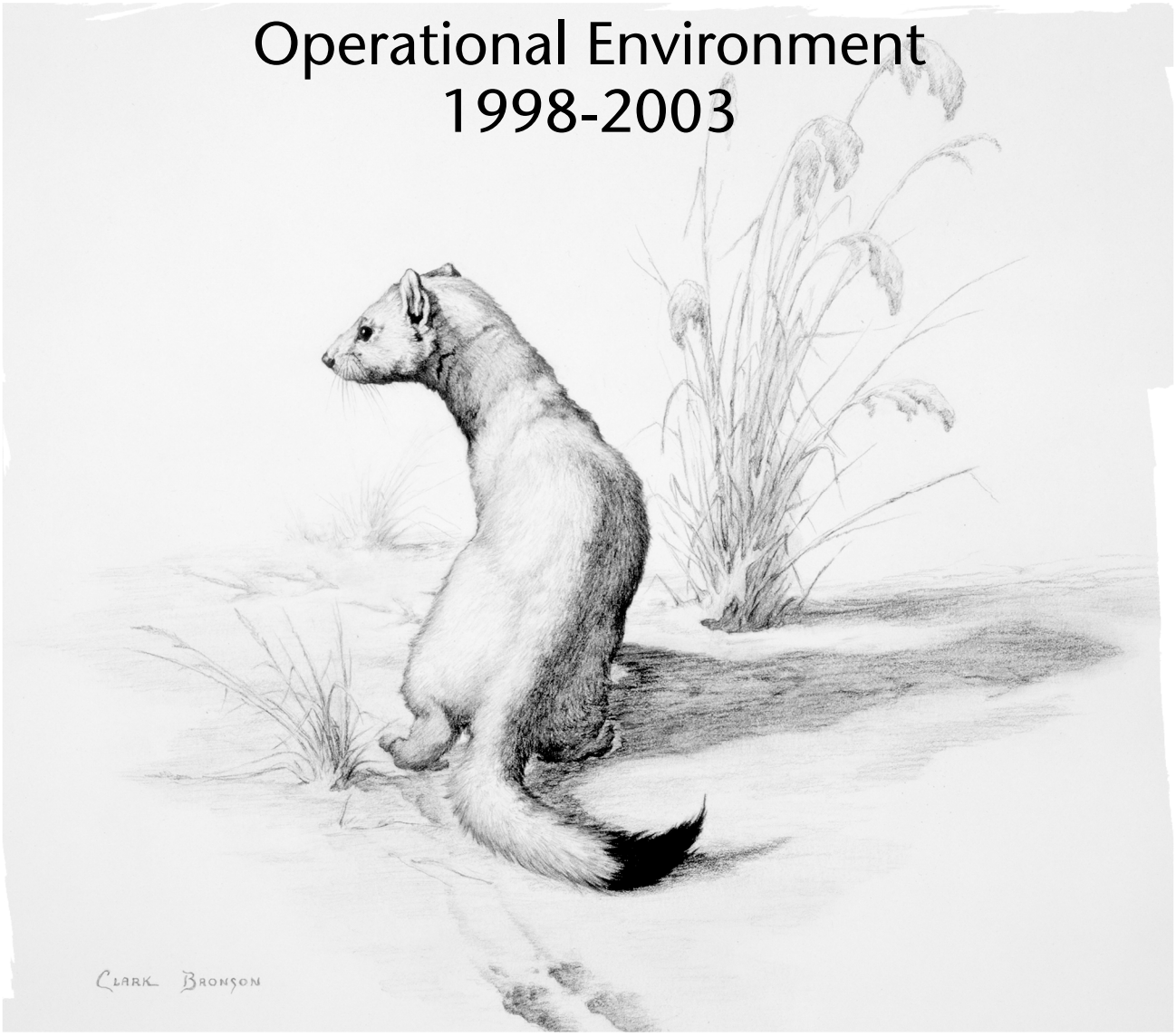
G-2. Increase habitat funds to $2.5 million annual revenue by 2003.

G-3. Diversify other funding by an additional $3 million annual revenue and increase alternative funding sources by 2 by 2003.

G-4. Increase by 20% general fund monies invested annually in the management of wildlife resources by 2003.

Utah Division of Wildlife Resources

Operational Environment 1998-2003



Internal/External Assessment Report–Summary

February 2000

STATE OF UTAH
NATURAL RESOURCES
Division of Wildlife Resources

Internal Factors

Organizational Structure

- The Wildlife Board is the policy-making body for the Division of Wildlife Resources (DWR or the Division). The membership consists of seven individuals who are required to have expertise or experience in at least one of the following areas: wildlife management or biology, habitat management, including range or aquatic; business, including knowledge of private land issues; economics, including knowledge of recreational wildlife uses. Five Regional Advisory Councils (RACs), representing a cross-section of wildlife interests (e.g., agriculture; sportsmen; nonconsumptive wildlife users; locally elected public officials; federal land agencies; and the public at large), listen to public input and make recommendations to the Wildlife Board.
- The DWR is currently structured as a decentralized organization, in which administrative personnel (e.g., Wildlife Section in Salt Lake City) act as architects of the wildlife program and field personnel (e.g., regions) act as builders.
- A decentralized structure creates more cohesiveness and flexibility in a region but communication and problem resolution within program areas can be difficult with this type of structure.

Organizational History and Culture

- Wildlife management in Utah has evolved from a time when people relied on wildlife for food and clothing to a time when modern society looks to wildlife for both intrinsic beauty and utilitarian value.
- A conservation ethic based on the stewardship of renewable natural resources underlies much of DWR's management approach. Wildlife stewardship includes human use of a scientifically determined harvestable surplus of game populations.
- The name of the agency changed from Fish and Game to Wildlife Resources, reflecting a broadening concern for wildlife. At the same time it recognizes the expanding cultural values for wildlife, which include a whole host of non-game species including threatened, endangered and state-listed sensitive species.

Fiscal Analysis and Budgeting

- The Division received $37.871 million in revenue in fiscal year (FY) 1999 from four major sources: restricted funds from the sale of licenses and permits or user fees ($20.984 million); federal funds, e.g., federal aid from excise taxes on hunting and fishing equipment, etc. ($9.150 million); state general funds appropriated by the Legislature ($3.559 million); and dedicated credits ($1.10 million). Additional funds of $3.068 million were carried forward from previous years. As a part of the revenues collected, the wildlife habitat account (from the sale of habitat authorizations) brought in $3.150 million (which is included in restricted funds above). Monies from the income tax checkoff and conservation license plates generated approximately $150,000 (which is included in dedicated credits above).
- Each revenue source has requirements and limitations on what the funds can support.
- The DWR can only spend what the Legislature appropriates but the appropriation is not a guarantee. Except for general funds, DWR may not spend at the appropriation level if less than that amount is generated.
- The largest expenditure category in the DWR budget is personnel which was 57% of the total FY 99 budget and an even larger percent of restricted funds.

Technology, Facilities and Equipment

- The DWR is fairly current with technology and equipment with the exception of the Biological Conservation Database (BCD), the Computerized Wildlife Information Database aspect of the Geographic Information System (GIS), and the Customer Information Systems including Automated Licensing. Both the BCD, which is The Nature Conservancy's relational product with international linkage through the Natural Heritage Program, and the Computerized Wildlife Information Database for GIS needs to have updated and modern platforms. For GIS, the problem is lack of meta-data regarding various wildlife inventories, some on the system and other inventories not yet documented. Regions can access the GIS database.
- Although some new facilities have been built, like the new DNR building in Salt Lake City which houses the DWR program offices, several regional offices and hatcheries need extensive work or replacement. The Kamas Hatchery is nearing completion and already has fish in its enclosed raceways (the enclosure was necessary due to the threat of whirling disease).
- Training to utilize the technology available in the future will be a challenge.

Habitat Fund

- In 1995, new legislation created the Wildlife Habitat Account funded by the Habitat Authorization, a fee paid by license buyers earmarked to fund habitat and access enhancements. Habitat Authorization funds can only be used to enhance, preserve, manage, acquire, and protect fish and wildlife habitat and to improve public access for fishing, hunting, trapping and wildlife viewing.
- The Director authorizes projects and funding after recommendations by the Habitat Council. The Council is comprised of three Division program chiefs (i.e., Habitat, Wildlife, Aquatics), the DWR Federal Aid Coordinator, and four citizen members representing big game, aquatics, wetlands and nonconsumptive interests.
- The fund has generated an average of about $2.25 million per year. Approximate expenditures for projects in 1999 were: aquatic projects - $982,000, big game projects - $766,000, upland game projects - $489,000, waterfowl projects - $287,000, and native species projects - $42,000.

Partnerships in Wildlife Management

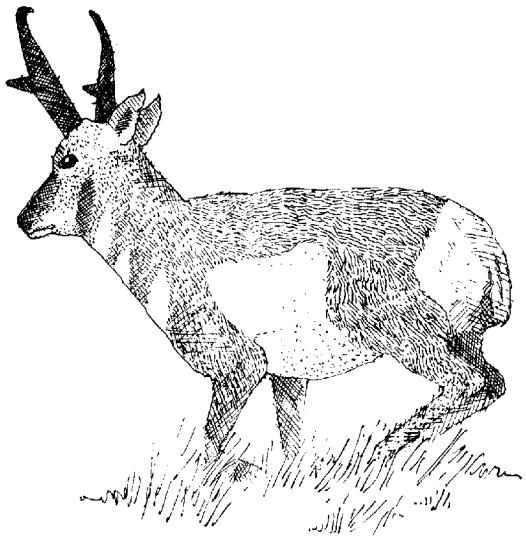
- Several agencies and organizations have a direct and vested interest in wildlife and habitat in Utah, including the U.S. Fish and Wildlife Service, the Bureau of Land Management, the U.S. Forest Service, the Rocky Mountain Elk Foundation, and the Foundation for North American Wild Sheep, to name a few.
- DWR has numerous cooperative agreements with agencies and organizations for conducting long-term research, achieving management goals, and disseminating information. Examples of agreements include the Western Association of Fish and Wildlife Agencies, Great Basin Station (Ephraim), Book Cliffs Conservation Initiative, and Utah State University's Cooperative Wildlife Research Unit.
- With the increasing complexity of wildlife issues and continuing emphasis on less government, the use of cooperative agreements will increase in the future.
- Cooperative Wildlife Management Units (CWMUs) are a major partnership initiative undertaken by private landowners and the DWR.
- The DWR issues several big game "conservation permits" to partners who auction them to members–generating funds that are generally returned to the DWR for that species' benefit (e.g., aerial surveys, transplants, radio telemetry studies, etc.). Some nongovernmental organizations also underwrite certain operational or research needs by funding special projects (i.e., avian and aquatics studies and habitat enhancements).

Central Utah Project (CUP)

- The CUP is a complex federal water development effort begun in 1956 to divert water from the western Uinta Basin to population centers along the Wasatch Front for irrigation or municipal and industrial uses.
- The CUP Completion Act, passed in 1992, provides for substantial mitigation and conservation measures associated with fish, wildlife, and outdoor recreation lost through federal water development in Utah. The authorized funding level is substantial and should result in major benefits to fish, wildlife, and outdoor recreation.
- For the next 30 years, a 5-member Commission coordinates and directs the mitigation and conservation measures according to a five-year plan, which is updated annually. The State provides matching funds and this provides an opportunity for the Division to shape the future direction of implementation through the plan.

Depredation Management

- Big game animals, predominately mule deer, elk and pronghorn, often utilize agricultural crops and stored feeds where these animals occur in close proximity to Utah's developed areas (agricultural depredation). Depredation also occurs when domestic livestock are in areas commonly shared with large predators and preyed upon by coyotes, cougar, and black bear.
- The DWR addresses the impacts of depredation through prevention (e.g., herding, fencing, diversion crops, killing animals by agency personnel, and public hunting) and compensation (e.g., monetary payments and mitigation permits for resale).
- The cost to the DWR is significant in personnel time, equipment, reduced wildlife populations, and funds expended. Direct payments and fencing materials can amount up to $500,000 annually, with some of these dollars coming from the State of Utah's General Fund. Biologists and other personnel expend time and resources that could be devoted to other important management issues. On a positive side, participating farmers and ranchers are compensated for most of their losses, which generates significant recreational hunting opportunity not available if wildlife had to be removed from private land. In this way, depredation, although undesirable to private landowners, presents an opportunity for enhancing DWR-landowner relationships.



External Factors

Wildlife Populations

Native Wildlife

- Utah has approximately 700 species of vertebrate wildlife that have been known to occur in the state within historical times—meaning the mid 1800s (i.e., 68 fish, 18 amphibians, 54 reptiles, 423 birds and 136 mammals), which includes species that are extinct, extirpated, accidental, and introduced or non-native species (also called exotic) species, and thousands of species of invertebrates.
- The wildlife community in Utah in the 1990s has changed from the one found 150 years ago, primarily due to the introduction of non-native species (e.g., plants, livestock, DWR introductions) and changes in land management practices.
- The number of vertebrate species identified by DWR as "species of special concern" increased from 64 in 1976 to 90 in 1998.
- Native wildlife species have benefitted in recent years from increased awareness, and management activities directed to recovering and stabilizing these populations. In particular, native terrestrial species like the peregrine falcon, bald eagle, river otter, and Colorado pikeminnow (formerly Colorado squawfish).
- There are four major areas of the state where Utah's native fish reside. Natives found in the mainstream of the Colorado River and its major tributaries include the Razorbacked sucker, Humpbacked chub, Bonytail (a chub), Colorado pikeminnow (formerly Colorado squawfish), and the Roundtail chub. Fishes native to the Virgin system of the Colorado include the Woundfin (a minnow), Virgin spinedace, Virgin River chub, Flannelmouth sucker and Desert sucker. The third area is the Great Basin, where the native fishes are the Least chub and the June sucker. Finally, the Bear Lake sculpin is endemic to Bear Lake, as are a few sport fish, like the Bear Lake whitefish, the Bonneville whitefish and the Bonneville cisco.

Threatened and Endangered (T & E) Wildlife

- Endangered and threatened wildlife are identified and managed under the U.S. Endangered Species Act, which sets specific guidelines for listing and management and is administered by the U.S. Fish and Wildlife Service (USFWS).
- Utah has 21 federally listed wildlife species (4 mammals, 6 birds, 8 fish, 1 reptile and 2 invertebrates). In addition, there are another 6 species in Utah that are either proposed for T & E federal listing or are candidate species (including 3 vertebrates as proposed and 3 invertebrates as candidate species). There are 139 state identified sensitive species in Utah–30 birds, 38 mammals, 6 amphibians, 25 reptiles, 22 fish, and 18 mollusks, many of which are federally listed as well. Of the state listed species, there are 15 endangered, 10 threatened, 103 of special concern, and 5 conservation species, the balance being extinct and extirpated.
- The DWR participates in most recovery efforts as a cooperator with the USFWS. Historically, recovery programs have focused on a single species but more recently have addressed multiple species and critical habitats.

Big Game

- Utah has nine species classified as big game: Rocky Mountain mule deer, Rocky Mountain elk, pronghorn antelope, Shiras moose, bison, Rocky Mountain goat, Desert bighorn sheep, Rocky Mountain bighorn sheep, and California bighorn sheep (introduced in 1997 on Antelope Island). All but the latter are hunted.
- Big game species are managed under separate species management plans.
- Over the last 15 years, the populations of all of these species, with the exception of mule deer, have increased, resulting in expanded viewing and hunting opportunities.

Upland Game

- Utah has 17 species or subspecies classified as upland game: six resident native birds (Gambel's quail, sage grouse, blue grouse, ruffed grouse, sharp-tailed grouse and Merriam's subspecies of wild turkey); two resident migratory birds (mourning dove and band-tailed pigeon); three birds introduced from the U.S. (California quail, white-tailed ptarmigan, and Rio Grand subspecies of wild turkey); three birds exotic to the Western Hemisphere (ring-necked pheasant, chukar partridge, and Hungarian partridge); and three mammals (mountain cottontail, desert cottontail, and snowshoe hare). These species are or will be managed under separate species management plans.
- Populations and hunting of many popular upland game species, including pheasant, dove, cottontail rabbit, and chukar partridge, have declined over the last 15 years due to habitat loss, drought, predation, and severe weather; and two species (sage and sharp-tailed grouse) are being considered for federal endangered and threatened species listing.
- Hunting interest has increased in formerly underutilized or expanding species including forest (ruffed and blue) grouse and wild turkeys.
- Over the next 15 years, pheasants and rangeland (sage and sharp-tailed) grouse will continue to decrease mostly due to habitat loss, degradation, and fragmentation while the remaining upland species will stabilize or increase in numbers and hunting popularity.

Waterfowl/ Cranes

- Populations of geese, swans, and cranes (i.e., Greater Sandhill cranes) have increased over the last 15 years. Following three years of excellent breeding habitat condition, most duck populations are at or above long-term averages, and some are at record highs.
- Hunting use of these species has declined nationally and statewide over the past 15 years, but is expected to stabilize or increase slightly since improved habitat conditions have resulted in greater waterfowl numbers, thus attracting former hunters back. Nonconsumptive use of these species is increasing and will likely exceed hunting use in the future, especially with reduced new hunter recruitment.
- The DWR manages 21 state waterfowl areas totaling 96,000 acres for these and other water birds. The U.S. Fish and Wildlife Service has three refuges in Utah.
- These species are or will be managed under separate species management plans.

Cougar/Bear/ Furbearer

- Eighteen furbearing animals are known to occur in Utah, 14 terrestrial and four aquatic species. Two terrestrial (i.e., coyote and raccoon) and one aquatic (muskrat) furbearer are not legally protected. At various times, all but two of these species were classified as predators or subject to bounty payments, or both. Bounties are paid for coyotes with State funds through a cooperative program with counties.
- One species native to Utah but without recent verified sightings is listed as endangered by the U.S. Fish and Wildlife Service (i.e., wolf); two species are rare in Utah (i.e., lynx and wolverine), and river otter as well as black-footed ferrets have been recently reestablished and reintroduced, respectively, in Utah. On October 21st, 1999, 26 black-footed ferrets were released in Coyote Basin, with a total population of about 72 ferrets now released; a 10% survival rate is typical, but so far, counts indicate a higher rate. With the exception of the ringtail cat, for which there is little information, populations of most of the remaining furbearers appear to be stable or increasing based on field observations, although their harvests have declined over the last ten years due to reduced demand for pelts.
- Black bear populations appear to have increased over the last 20 years although habitat loss and human encroachment on bear habitat are concerns. Numbers of nuisance calls and bears killed by the U.S. Department of Agriculture's Wildlife Services (formerly called Animal Damage Control) have risen. A citizen discussion group has begun drafting a black bear management plan which is expected be approved in 2000 by the Utah Wildlife Board.
- The cougar is the most abundant large predator in Utah and has statewide distribution. Cougar management is controversial; some segments of the public want to reduce numbers due to predation on livestock and deer while others want them protected. Based on harvest statistics, populations appear to have increased over the long-term but recent increases in harvest have stabilized or reduced populations in some areas. Habitat loss and human encroachment on cougar habitat are a concern. A cougar management plan developed by a citizen advisory group was adopted in 1999 by the Utah Wildlife Board.
- These species are or will be managed under separate species management plans.

Sport Fish

- Historically, Utah's sport fish species were limited, consisting of 2 subspecies of cutthroat trout and 3 species of whitefish (including the Bonneville whitefish, the Bear Lake whitefish and the Bonneville cisco). All other trout, salmon, grayling, and warm water fishes used by anglers were introduced.
- Most Utah fisheries (75%) are cold water fisheries since warm water habitat is limited. Utah is the second driest state in the U.S. and has less than 100 miles of "blue ribbon" trout streams. As a result, three-fourths of angling occurs on reservoirs. Deteriorating habitat and water quality in a few reservoirs, together with competition with other fish in the available habitat also limit fisheries. Concern for native species limits the development of warm water fisheries in some areas.
- Historically, and over the long term, the number of anglers, days angling and fish caught has increased and likely will continue to do so, although less dramatically.
- These factors have led to a heavy demand on hatcheries for larger size and more pounds of fish, as well as the stocking of more species. With the threat of whirling disease added to these factors, hatcheries will have more management difficulties in the future.
- In response to the greater demands on the resource and an increased variety of fisheries, regulations have become more complex and restrictive, a trend which will continue.

Invertebrates

- Invertebrates (animals that lack vertebrae) are the most abundant animal organisms on earth, comprising more biomass than any other animal taxa. Representatives from almost all invertebrate groups occur in Utah, the most common and largest of the groups being mollusks (snails), freshwater clams and arthropods (spiders, crustaceans, and insects).
- In Utah, the most common invertebrate collected for food is crayfish. Earthworms and brine shrimp are commercially harvested invertebrates.
- Invertebrates have rarely been a primary management priority so distribution and abundance data is lacking for most species.
- Currently, crustaceans (crayfish and brine shrimp), as well as mollusks are the only invertebrates covered under Utah law (Wildlife Resources Code, Title 23). Five invertebrate species in Utah are on the USFWS's endangered, threatened and candidate species list (2 endangered snails, 2 candidate snails, and 1 candidate beetle). The five federally listed species, along with 18 mollusks, are on the state sensitive species list.

Plants and Plant Communities

- Plants are not directly covered under the Wildlife Resources Code, Title 23, but are tracked in the Natural Heritage Database maintained by the DWR. Funding is through a cooperative agreement between the Department of Natural Resources and the USFWS, and on a project basis from a wide variety of government agencies, non-governmental organizations, and private interests. Management of most sensitive plants is done by land management agencies (e.g., BLM, USFS).
- Utah has a rich flora with 2,602 species and 393 subspecies or varieties of native plants. Utah is one of the top five states regarding the number of rare native plants present. However, the last inventory of rare plants occurred 25 years ago.
- Presently, 21 plants in Utah are listed as threatened or endangered by the U.S. Fish and Wildlife Service. Seven more Utah plants are candidate species and one plant is proposed for listing as a threatened species.
- Changes in the federal process to review rare plants for endangered species listing process give the state a larger role than in the past. In the future, single species management will be replaced by plant community and ecosystem approaches.

Physiography and Climate

- Climate patterns are closely related to the five physiographic regions, defined by topography, geologic structure, and elevation that occur within Utah: Basin and Range Region (western one-third of state); Mojave Desert (extreme southwest); Utah Mountains (Uinta and Wasatch mountain ranges); Colorado Plateau (southeastern portion of state); and Wyoming Plateau (northwest portion).
- Utah's climate is typical for a semi-arid desert biome, with the exception of northern Utah which experiences variations caused by the Great Salt Lake.
- Average annual precipitation ranges from a low of less than 8 inches to a high of over 50 inches of water per year. Most of the high precipitation readings are recorded in the mountainous portions of the state while over two-thirds of the state receives less than 12 inches of total precipitation per year.
- Drought, as measured by the Palmer Drought Severity Index, has differed substantially over the last 20 years. In general, the period from 1977-86 did not have drought conditions while the next 10 year period has been characterized by long-term drought.

Physiography and Climate
continued

- El Nino and La Nina are disruptions of the ocean-atmosphere system in the tropical Pacific that can affect weather around the globe. El Nino and La Nina effects in Utah are not predictable. In general, southwestern Utah has more summer precipitation, but snowfall varies. In the last 30 years, six strong El Nino events have occurred: three have had higher than normal snowfall and three have had lower snowfall.

Wildlife Habitat

- Important habitat types in Utah include rangeland, mountain brush, forests, alpine, riparian and river bottoms, wetlands rivers and streams, lakes and reservoirs, the Great Salt Lake, exposed minerals (alkali, sand, mud and playa), and cultivated land.
- Most of Utah's rangeland vegetation has significantly changed in quantity and quality since European settlement of the state due to wildfire control and livestock grazing (bunch grasses replaced by desert shrubs and juniper), and introduced alien herbaceous species (e.g., Russian thistle and cheatgrass). Beyond the spread of alien species, sagebrush dominated ranges in Utah are in their best condition of this century. This benefit can be partially attributed to private landowners' improved range management practices.
- Riparian areas are the richest habitat type in terms of biodiversity and wildlife abundance.
- Forests in Utah are of four basic types: spruce-fir, lodgepole/ponderosa pine, aspen and pinyon-juniper. Aspen communities provide a number of ecosystem values including watershed protection and improved water yields: and are second to riparian areas in wildlife species diversity and abundance. Due to fire control and excessive browsing of young aspen, many acres of aspen have been displaced by conifer forests, which transpire more water and have sparse understories.
- Timber harvesting efforts have shifted from saw timber to chipped wood products.

Natural Resource Development

- Timber harvest, never a significant industry in Utah, has been decreasing on public land. Harvest information for private lands is unavailable.
- Utah's diverse mineral resources include locateable (e.g., gold, silver, uranium), leaseable (e.g., oil and gas, coal, potash) and saleable (e.g., sand, gravel, quarry rocks) minerals. Development of mineral resources is dictated by market conditions but consistent production continues from copper mining (Kennecott), coal mining (southeastern Utah), oil and gas production (overthrust belt), and potash (Moab area). Tar sands on eastern Utah's Tavaputs Plateau and geothermal energy resources in southcentral Utah have substantial potential for development.
- Agriculture remains important in the state but farmland continues to decline due to urban/suburban sprawl. Between 1974 and 1992, Salt Lake and Davis Counties lost over half of their agricultural lands; such a trend will continue unless a plan is formulated and implemented. Sheep grazing is also decreasing while cattle grazing is increasing.

Water and Water Use

- Under Utah Water Law, which follows the "doctrine of prior appropriation," water can be diverted from streams for beneficial uses. Prior to 1986, beneficial use did not include maintaining minimum in-stream flows for fish and wildlife, so water users can legally divert all water out of a stream. However, water rights may now be purchased to protect instream flows for fish and wildlife use.

Water and Water Use
continued

- Stream habitats are impacted by both dewatering (in summer for irrigation diversions and in winter below storage reservoirs) and flooding (high irrigation flows are released from storage reservoirs). Reservoirs are impacted by unstable water levels through filling and irrigating that prevent the establishment of littoral vegetation.
- Water rights have been purchased by DWR for fish and wildlife, but this has decreased since 1983 due to reduced budgets and the high cost of water. Most acquisitions in the future will be made with partners (e.g., CUP).
- Human population growth and urbanization will place greater demand on water in the future, reducing the amount available for agriculture and possibly wildlife.

Environmental Regulation

- The DWR is one of seven Divisions in the Department of Natural Resources with a role in planning for resource development. The Department of Environmental Quality and the Governor's Office of Planning and Budget direct most environmental regulation.
- In general, Utah has accepted the minimum standards in federal legislation to protect the environment, the most familiar ones being the Clean Air Act and Clean Water Act. In some cases, the state has assumed certain regulatory responsibilities of these acts through an agreement with the administering federal agency (e.g., Stream Alteration by the Utah Division of Water Rights).
- Generally, DWR's role in environmental regulation is to assess impacts of activities detrimental to wildlife and negotiate mitigation or restitution. The DWR's role is not likely to change in the next 15 years.

Land Ownership

- Land ownership in Utah is dominated by federal lands (67.5%), followed by private (23.8%), state (6.9%) and Indian lands (4.3%). Most federal lands (BLM and Forest Service) are managed under a multiple use philosophy.
- Private lands were selected through the Homestead Act for their productivity, proximity to water and low- to mid- elevation, and as a result are extremely important to wildlife for winter habitat and as riparian areas. Due to the ownership pattern, these lands frequently control access to public lands.
- State-owned lands provide important benefits to wildlife and wildlife users. School and Institutional Trust Lands are a mixture of mostly scattered parcels with several large blocks which provide wildlife habitat and access. Utah Sovereign Lands include lands determined to have been navigable at statehood and were retained in ownership by Utah. Sovereign lands are managed for multiple purposes and include the beds of Great Salt Lake, Bear Lake, Utah Lake, some stretches of the Green, Colorado, and Jordan Rivers and 1,608 miles of lake and river shoreline. The DWR owns 412,000 acres of some of the most critical wildlife lands including deer and elk winter range, wetlands, Great Salt Lake marshes, conservation pools, riparian habitats, dams, and access to important streams.
- Public land ownership is stable but wilderness designation has/can impact the use of some federal lands (e.g., Grand Staircase-Escalante National Monument). Private land ownership, particularly agricultural lands, could be impacted by spreading urbanization. Larger privately-owned lands are in danger of being converted to smaller parcels and/or uses that are different from in the past, and thus resulting in reduced habitat values.

Public Access

- The large percentage of public ownership in Utah generally provides good public access to wildlife. Some counties in southern Utah are over 80% publicly owned. Conversely, many counties in northern Utah, where most of the state's population lives, are over 50% privately owned.
- Key public acquisitions in the past now provide good access to big game habitat and waterfowl marshes.
- Due to the pattern of private ownership previously discussed, access to streams and riparian areas is the most limited. Posting of these lands to trespass has increased dramatically over the last 30 years.
- Access problems are expected to increase due to population growth and development (both urbanization and country living in rural subdivisions), overuse, and land use changes
- Excessive recreational use, particularly by ATVs, is an increasing public lands concern.

Technology

- Advances in technology have influenced wildlife management over the last 15 years and will be an even greater factor in the next 15 years. Rather than breakthrough technologies, advances in existing technologies are expected to have the greatest effect.
- In the near term, technological changes will include improved hunting and fishing equipment and recreational vehicles, as well as communication technology leading to greater public demand for more and faster communication of information.
- In the longer term, technological changes will be more radical and might include virtual reality participation, nonlethal harvesting, and genetic engineering of wildlife.

Demographics

- Utah's population doubled from 1 million to 2 million in the last 25 years and is expected to increase by another million people by 2015.
- Almost 3/4 of the growth has been due to natural increase (births) and only 1/4 from net human migration. As a result, Utah has the youngest population in the U.S.
- Land ownership, topography and the arid climate have resulted in a concentrated population. Utah ranks 40th of the states in population density but 6th in urbanization. The four counties along the Wasatch Front account for 75% of the population and the Wasatch Front will continue to dominate in the future, although the growth is spreading to adjacent counties as well as Washington County.

Wildlife Users

- Wildlife users are generally divided into consumptive (hunting and fishing) and nonconsumptive (wildlife watching) users, although many people do both. In addition there are high and low wildlife interest nonparticipants who also may desire services.
- Nationally, hunting and fishing participants were stable while wildlife-watching participants declined over the 1991-1996 period.
- Utah residents participating in hunting and wildlife watching decreased from 1991 to 1996 while resident anglers and nonresidents in all categories of use increased.

Wildlife Users
continued

- In 1996, Utah had an estimated 406,000 anglers (65% residents), 143,000 hunters (79% residents) and 433,000 participants in nonresidential wildlife-watching activities (47% residents), aged 16 and older (Table 1). Compared to a similar survey in 1991, anglers (+30%) and wildlife-viewers (+4%) have increased while hunters (-25%) have decreased (a portion likely due to the cap placed on deer hunting permits).
- Days of participation increased for hunting, fishing, and wildlife-watching except for residents participating in wildlife watching (Table 2). The increase in hunter days was surprising with the decrease in hunter numbers. Individuals who hunted in 1996 averaged 12 days of hunting compared to an average of 8 days in 1991. Residents did not shift to other states to hunt since hunter days by Utah residents in other states did not increase between 1991 and 1996.
- Projections for Utah are that hunting will continue to decrease, although at a slower rate than the last five years, while fishing and wildlife-watching participation will maintain or gradually increase. The greatest impacts to hunting will be population aging and reduced opportunity.

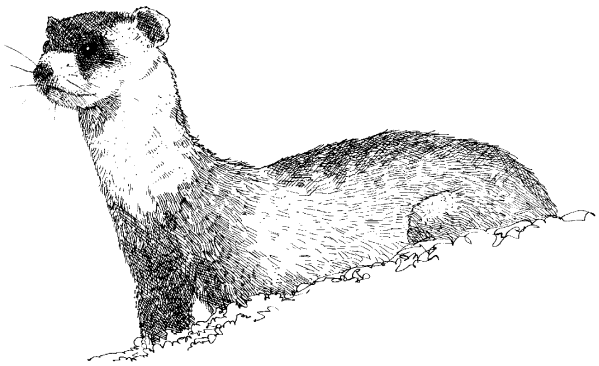


Table 1.

Participants (U.S. residents, age 16 and up) in hunting, fishing and wildlife watching in Utah, 1991 and 1996. (In Thousands)

Activity	Total	Residents	% User	Nonresidents
1991				
Hunting	177	158	22*	19
Fishing	317	226	34*	91
Wildlife Watching:				
On A Trip (> 1 mi.)	415	245	68*	170
Near Home (< 1 mi.)	463	463	–	0
Total	–	736	–	–
1996				
Hunting	143	113	21*	30
Fishing	406	265	53*	141
Wildlife Watching:				
On A Trip (> 1 mi.)	433	201	74*	231
Near Home (< 1 mi.)	380	380	–	0
Total	–	558	–	–

*Percentage of Utah resident wildlife users does not total 100 percent since users may participate in more than one activity.

Table 2.

Days of participation (U.S. residents, age 16 and up) in hunting, fishing and wildlife watching in 1991 and 1996 (In Thousands).

Activity	Total In Utah	Residents In Utah	Nonresidents In Utah
1991			
Hunting	1,354	1,294	60
Fishing	2,539	1,930	609
Wildlife Watching:			
On A Trip (> 1 mi.)	2,987	2,002	983
Total	6,878	5,226	1,652
1996			
Hunting	1,660	1,445	205
Fishing	3,926	2,843	1,083
Wildlife Watching:			
On A Trip (> 1 mi.)	2,802	1,384	1,417
Total	8,388	5,672	2,705

Public Attitudes /Opinions

- Surveys in Utah in the 1975, 1986, and 1998 found that Utah residents, both license buyers and the general public, rated DWR as good and supported existing management programs. In 1998, nonconsumptive participants, or nonparticipants with a high wildlife interest tended to rate the DWR higher than license buyers.
- In 1998, Utah residents overwhelmingly supported protection of wildlife habitat when asked about a variety of land use trade-offs (i.e., energy resource extraction, road and housing developments where they threaten either wildlife or important habitats. They also were highly supportive of acquiring water rights to protect aquatic life and are extremely enthusiastic about acquisition efforts focused on riparian areas, as well as lands providing key deer and elk habitat.
- Most participants in wildlife recreation, both consumptive and nonconsumptive, identified the same factors as being important for a satisfactory trip: seeing wildlife, being out-of-doors and getting away from everyday problems.
- A national survey of the general public in the 1990s found most Americans support hunting and fishing and believe they should remain legal if practiced responsibly, but many have a concern over unethical and illegal behavior by participants. Nationally, hunters and anglers are very satisfied with wildlife agency efforts for wildlife.

Wildlife Economics

- Nationally, Americans spent an estimated $101 billion on wildlife-associated recreation, including hunting, fishing, and wildlife watching in 1996 (U.S.D.I., Fish and Wildlife Service and U.S. Department of Commerce, Bureau of the Census, 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation).
- Utah residents and nonresidents spent $132 million for hunting, $231 million for fishing, and $237 million for wildlife-watching activities in 1996 in Utah. Compared to 1991, expenditures in Utah increased 53% for hunting, 50% for fishing, and 39% for wildlife watching.

Table 3.

Expenditures for Wildlife Watching in Utah, 1996

Trip-related Expenditures	$125,477,000
Expenditures for Equipment	$83,397,000
Expenditures for Other Items	$27,752,000
Total Expenditures	**$236,626,000**

Wildlife Economics
continued

- For hunting, fishing, and viewing combined, retail sales exceeded $607 million which generated $1.15 billion in total economic output. The economic output included $326 million in wages which supported 18,353 jobs and generated over $30.2 million in state sales tax and over $13.5 million in state income tax.

Table 4.

Economic Impacts for Wildlife-Associated Recreation in Utah, 1996

	Retail Sales	Economic Output	Earnings	Jobs	Sales Tax	State Income Tax
Hunting	$150,829,764	$306,601,356	$86,719,044	4,831	$8,313,187	$3,583,553
Fishing	$231,291,509	$468,403,271	$124,003,524	6,773	$11,275,261	$5,193,480
Viewing	$225,800,000	$381,000,000	$115,700,000	6,749	$10,700,000	$4,800,000
Total	**$607,921,273**	**$1,156,004,627**	**$326,422,568**	**18,353**	**$30,288,448**	**$13,577,033**

- Wildlife related recreation expenditures contribute significantly to Utah's economy. Wildlife expenditures provide a mechanism to move money from the Wasatch Front to rural Utah.
- Wildlife has economic costs as well, including endangered species habitat protection, wildlife depredation, and wildlife damage to private property (e.g., car deer collisions).

Privatization of Wildlife

- Traditionally and legally, wildlife in the U.S. has always been a public resource. Unlike the European system, ownership of wildlife in the U.S. is not one of the rights associated with property ownership. Utah landowners have few opportunities to profit from wildlife, apart from charging an access fee for wildlife-related recreation on their property, however, the 1998 Legislature approved elk harvest from enclosed game ranches on private lands.
- Since the 1960s, numerous programs have been created, either legislatively or administratively, which blur the line between private and public ownership of wildlife, including: private aviculture and aquaculture facilities, commercial hunting areas for upland birds, cooperative wildlife management units for upland and big game, landowner big game permits, depredation/mitigation vouchers, and elk ranching.
- The future holds questions about where this ownership trend will lead, as well as the legal liability of the public for actions of wildlife.

Commercial Use of Wildlife

- The Wildlife Resources Code, Title 23, prohibits commercial use of wildlife except as specifically provided by code. The exceptions include: aquatic animals from aquaculture or fee-fishing facilities; commercial hunting areas for pen-raised game birds; Cooperative Wildlife Management Units (CWMUs) for hunting; commercialization of nongame animals not listed through the current proclamation as prohibited; captive-bred raptors for falconry; captive-bred and legally taken furbearers; antlers, heads, hides and horns of legally taken big game; captive-bred elk, caribou, fallow deer, muskox and reindeer; and finally the hides of legally taken bears and cougars.
- Currently, guides and guiding for wildlife recreation is not regulated.
- Economically, the largest single commercial use of wildlife is the brine shrimp harvest on the Great Salt Lake.
- Commercial use is likely to increase in the next 15 years. The potential areas of increase are: expanded aquaculture, other big game ranching, additional CWMUs, increased guiding and outfitting, new private hunting areas for domestic and exotic wildlife, and expanded trade in exotic and native birds and reptiles.

Other Publications

For further information and detail, please refer to the following documents associated with Utah's comprehensive management system.

Available on the Utah Division of Wildlife Resources webpage at http://www.nr.state.ut.us/dwr/dwr.htm

Dolsen, D.E. and Phillips, S. 1999. *Highlights from A Public Opinion Survey*. Utah Division of Wildlife Resources, March 10.

Krannich, R.S. and Teel, T.L. 1999. *Attitudes and Opinions About Wildlife Resource Conditions and Management in Utah: Results of a 1998 Statewide General Public and License Purchaser Survey* and *Utah Residents' Views About Selected Wildlife Management Issues: Similarities and Differences Across Five Stakeholder Categories.* Final Reports to the Utah Division of Wildlife Resources. Logan, UT: Utah State University, Institute for Social Science Research on Natural Resources, 264 pp.

Available Publications (Paper Copies):

Utah Division of Wildlife Resources. 2000. *Internal/External Operational Environment Assessment Report*.

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